UNIT 1 Introduction to Internet
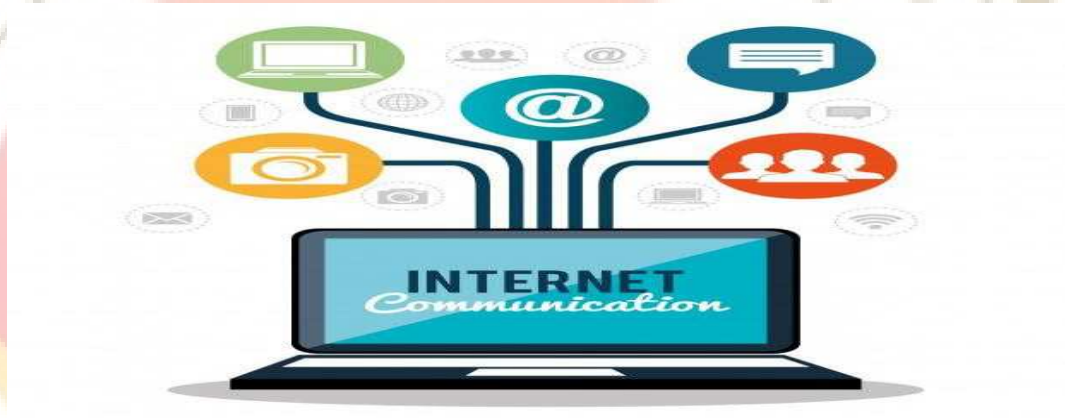
Concepts Of Internet

What is Internet?

- The Internet stands for Interconnected Network.
- The Internet is a vast network that connects computers all over the world.
- Through the Internet, people can share information and communicate from anywhere with an Internet connection.
- The Internet is a global wide area network.

- The Internet provides different online services. Some examples include:

  1. Web – a collection of billions of webpages that you can view with a web browser
  2. Email – the most common method of sending and receiving messages online
  3. Social media – websites and apps that allow people to share comments, photos, and videos
  4. Online gaming – games that allow people to play with and against each other over the Internet
  5. Software updates – Operating System and application updates can typically downloaded from the Internet

➢ **Application of Internet**

- Internet Applications can be described as the type of applications which use the internet that is, by using the internet for fetching, sharing and displaying the information from the one computer system to another computer system.
- The Internet Applications be accessed only with the help of the internet facility, and it cannot be functional without internet.
- These applications can be classified as electronic devices based, automated digital technology, industrial internet, smart phones based, smart home based, smart grids, smart city, and other major applications.
- Here are the top 8 internet applications listed below:
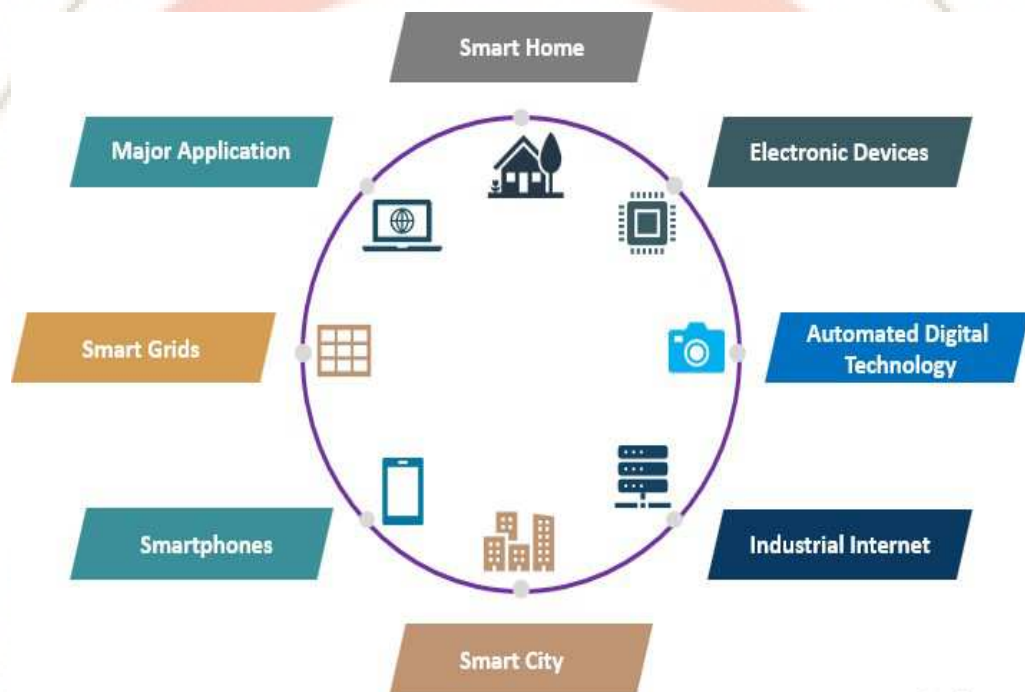
1. Smart Home
- Smart Home has become the very popular in residential and developing as common as Smartphone.
- It is a special feature of Google and now deployed in many areas to make life convenient and user-friendly.
- Smart home is designed to save time, money and energy.

2. Electronic Devices
- The electronic devices like wearable are installed with different sensors and software which gather data and information of the user.

- The devices mainly used to monitor fitness, entertainment, and health. They mostly work on ultra-low power and available in small sizes. Example Smart watch.

3. Automated Digital Technology

- The automated digital technology has concentrated on the Improvement of vehicles and their internal functions. (Manual to Automated)
- The automated car is designed with special features that give a comfort zone to passengers with onboard sensors and internet establishment. The popular companies like Tesla, Apple, BMW,

4. Industrial Internet

- The industrial internet is investing in industrial engineering with Artificial intelligence and data analytics to build brilliant machines.
- The important Moto is to build smart machines that are accurate and compatible with a human. It holds vast potential with good quality and reliability. Example Robot

5. Smart City

- A smart city is another major implementation of the internet which is employed for smart surveillance, water distribution, automatic transportation, environment monitoring.
- People are prone to pollution, improper supplies and shortage of sources, and irregular traffic flow are solved by the installation of traffic sensors, and the app is developed to report the municipal systems.

6. Smartphone

- Smartphone are also used for retailers and customers to stay connected for their business transactions even out of the store. They can track the products and enhance the store dashboard and deliver premium order before the scheduled date even in congested traffic areas.

7. Smart Grids

- The idea applied in smart grids is to gather data in an automated way to analyze the attribute.The Smart Grid will consist of controls, computers, automation, and new technologies and equipment working together

8. Major Application (Health Care)

- Another major application of the internet is in healthcare as it is smart medical systems installed to diagnose and cure the disease at an earlier stage. The gathered medical data of patients made the treatment easier and monitoring device is installed to track the sugar and blood pressure.

Evolution of Internet

- The Internet started off with research into what was then known as packet switching as early as the 1960s. The Internet started in the 1960s as a way for government researchers to share information. Computers in the '60s were large and immobile and in order to make use of information stored in any one computer, one had to either travel to the site of the computer or have magnetic computer tapes sent through the conventional postal system.

- Packet switching was thought of a better and faster method to transfer data than the hardware solution to the problem, i.e., the circuitry. The packet switching technology was essential to the development of ARPANET by the United States Military.

- ARPANET is considered the first known group of interconnected computers aka the internet. This system was used to transfer confidential data between the Military. January 1, 1983 is considered the official birthday of the Internet. Prior to this, the various computer networks did not have a standard way to communicate with each other. A new communications protocol was established called Transfer Control Protocol/Internetwork Protocol (TCP/IP). This allowed different kinds of computers on different networks to "talk" to each other. ARPANET and the Defense Data Network officially changed to the TCP/IP standard on January 1, 1983, hence the birth of the Internet.

- This data sharing technology was then opened to educational institutes in the United States to allow them to access to the government's supercomputer, first at 56 kbit/s, then at 1.5 Mbit/s, and then at 45 Mbit/s. Com Internet service providers began to arise in the late 1980s and the internet was fully commercialized in the US by 1995.

Timeline of the Internet

1965 — Lawrence Roberts and Thomas Merril communicate with one another using computers connected via a low-speed dial-up telephone line in Massachusetts and Californiav, creating the first Wide Area Network and laying the groundwork for the internet.

1969 — ARPAnet, the first version of the internet, is created and used to link computers at UCLA and Stanford.

1974 — Robert Kahn and Vinto Cerf publish "A Protocol for Packet Network Communication" laying the groundwork for TCP/IP and much larger, interconnected computer networks. The word "internet" is first used.

1986 — NSFNET is founded, creating the backbone and providing the investment needed to create the internet as we know it today.

1989 — The first commercial ISP, The World, launches.

1989 — Tim Berners-Lee invents the world wide web and the first web browser, which opens the door for the internet to go mainstream.

1993 — The first web browser available to the public, Mosaic, launches.

1994 — Netscape Navigator is released in stores.

2000 — Some 300 million people around the world are officially online.

2004 — Facebook launches and the Web 2.0 begins to grow rapidly.

2007 — The iPhone is released, giving rise to the mobile revolution.

2010 — 1.966 billion people are online worldwide.

2019 — 4.3883 billion people are online.

Internet Services

Internet Services allows us to access huge amount of information such as text, graphics, sound and software over the internet. Following diagram shows the four different categories of Internet Services.
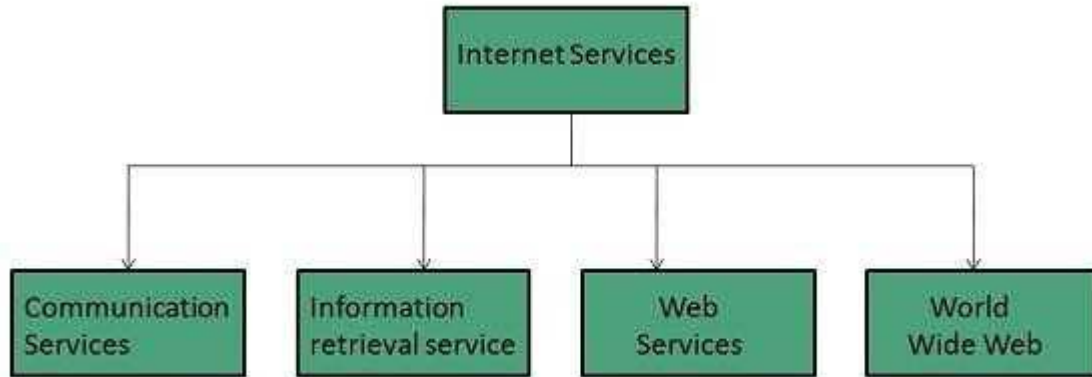
1. **Communication Services**

There are various Communication Services available that offer exchange of information with individuals or groups. The following table gives a brief introduction to these services:

S.N.	Service Description
1	Electronic Mail Used to send electronic message over the internet.
2	Telnet Used to log on to a remote computer that is attached to internet.
3	Newsgroup Offers a forum for people to discuss topics of common interests.
4	Internet Relay Chat (IRC) Allows the people from all over the world to communicate in real time.

5	Mailing Lists Used to organize group of internet users to share common information through e-mail.
6	Internet Telephony (VoIP) Allows the internet users to talk across internet to any PC equipped to receive the call.
7	Instant Messaging Offers real time chat between individuals and group of people. Eg. Yahoo messenger, MSN messenger.

2. Information Retrieval Services

There exist several Information retrieval services offering easy access to information present on the internet. The following table gives a brief introduction to these services:

S.N.	Service Description
1	File Transfer Protocol (FTP) Enable the users to transfer files.
2	Archie It's updated database of public FTP sites and their content. It helps to search a file by its name.
3	Gopher Used to search, retrieve, and display documents on remote sites.
4	Very Easy Rodent Oriented Netwide Index to Computer Achieved (VERONICA)

VERONICA is gopher based resource. It allows access to the information resource stored on gopher's servers.

3. Web Services

Web services allow exchange of information between applications on the web. Using web services, applications can easily interact with each other. The web services are offered using concept of Utility Computing.

4. World Wide Web (WWW)

WWW is also known as W3. It offers a way to access documents spread over the several servers over the internet. These documents may contain texts, graphics, audio, video, hyperlinks. The hyperlinks allow the users to navigate between the documents.

➢ **Video Conferencing**

Video conferencing or Video teleconferencing is a method of communicating by two-way video and audio transmission with help of telecommunication technologies.

- **Modes of Video Conferencing**
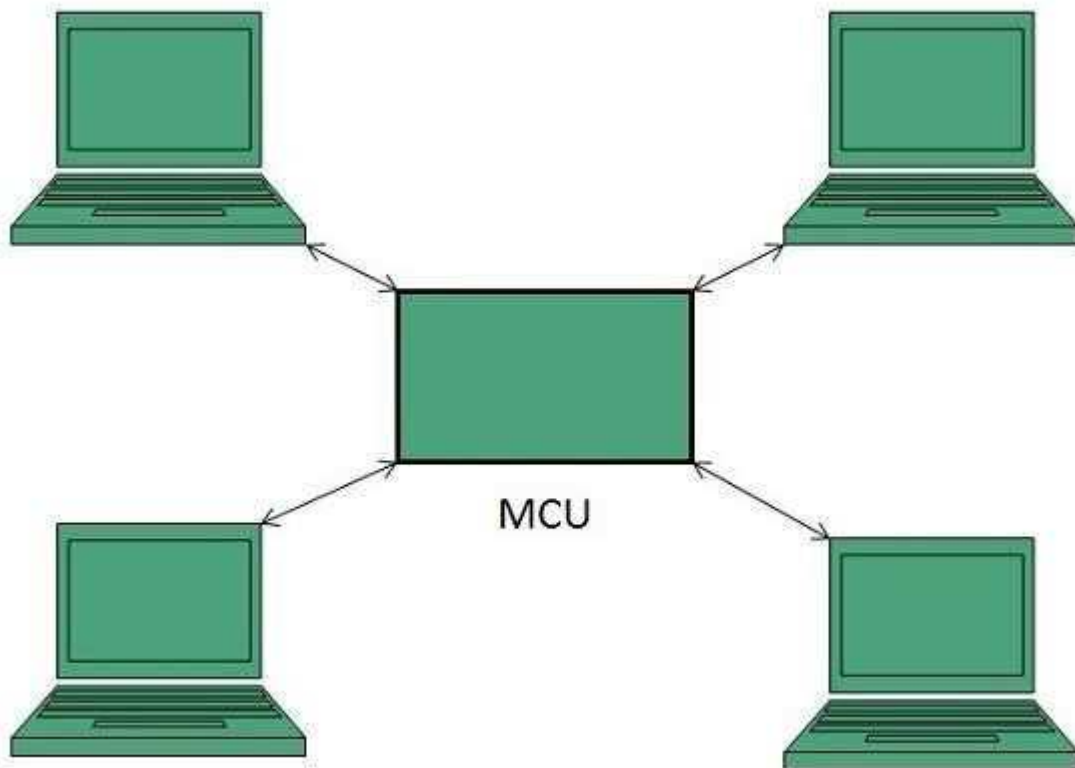 1. Point-to-Point

This mode of conferencing connects two locations only.

  2. Multi-point

This mode of conferencing connects more than two locations through Multi-point Control Unit (MCU).

MCU

Advantages and Disadvantages Of Internet

➢ **Advantages Of Internet**

1. **Communication**

   The speed of communication becomes faster which is obtained through the web. Families and friends can confine touch easily. The platform for products like Whatsapp allows for holding a video conference with anyone within the world who also has access.

2. **Rich of Information**

   Anyone can find information on almost any imaginable subject. Many of resources are often found through the program in minutes. Ex. Google

3. **Endless Education**

   For instance, students can gain readily available help for his or her homework online. Ex. www.tutorialpoint.com

4. **Entertainment for everybody**

   Most folks love using our laptops, Smartphone, and, tablets. The web is that the big reason behind us spending such a lot of time on these devices. Ex. www.telegram.com

5. **Online Services and E-commerce**

   Many services of emails, online banking, online shopping, etc are there. Free mail to anyone is definitely accessible all around the world. E-commerce enables one in America to shop for things in Asia, Africa, or other areas within the world through some simple clicks of the mouse. Ex. www.amazon.com

6. **Social network**

   Social networking is the sharing of data with people across the planet. Aside from being an entertainment website, it's many uses. Ex. www.facebook.com

7. **Learning**

   The web has now become a neighborhood of education. Education like homeschooling is definitely administered using the web. Teachers can upload their teaching videos on the web. Ex. www.youtube.com

   ➢ **Disadvantages of Internet**

The Internet's drawbacks can't be overlooked any longer as numerous teenagers are affected by Internet Addiction Disorder, then many ladies became online shopaholics.

1. **Internet Addiction Disorder –**

   Internet addiction is detrimental to not only fitness but also psychological state.

2. **Cyber Crime –**

   Hacker programs a virus which gets into the pc and ruins valuable data. Users' personal information like name, address, master card, bank details, and other information are often accessed by culprits when used on the web, leading to significant economic loss.

3. **Social Alienation –**

   Time spent online flies fast without consciousness. After getting attracted the user trapped into the trap, users are trapped by a "net", spending less time with people in the real world. Less interaction and face-to-face communication, actually, may end in a decrease in social abilities.

4. **Spam**

The unnecessary emails, advertisements, etc. are sometimes said to be spam because they need the power to hamper the system and make the users face many problems.

5. **Online Frauds**

The internet is a boon for people to conduct business effectively, very quickly. Internet is also an open invitation to fraudsters and online frauds are becoming increasingly out of control.

Internet Connection

Types of Internet Connection

There are many ways a personal electronic device can connect to the internet. They all use different hardware and each has a range of connection speeds. As technology changes, faster internet connections are needed to handle those changes.

Internet connections have different bandwidths (speeds) that depend partially on your computer's capabilities and partially on the connection you get from your provider. Faster speeds allow you to send data faster.

1) Dial-Up Connection

2) Leased Connection

3) Broadband Connection

4) Wi-Fi

5) Mobile Broadband

6) Mobile Hotspot

7) Cable Model Connection

1) **Dial-Up Connection**

Dial-up, as the name suggests, is the method of dialing and connecting to the Internet. It is one of the oldest methods of Internet access and sometimes the most trusted one also.

Dial-up connection uses telephone line to connect PC to the internet. It requires a modem to setup dial-up connection. This modem **works** as an interface between PC and the telephone line.

There is also a communication program that instructs the modem to make a call to specific number provided by an ISP.

Dial-up connection uses either of the following protocols:

1. Serial Line Internet Protocol (SLIP)

2. Point to Point Protocol (PPP)

The following diagram shows the accessing internet using modem
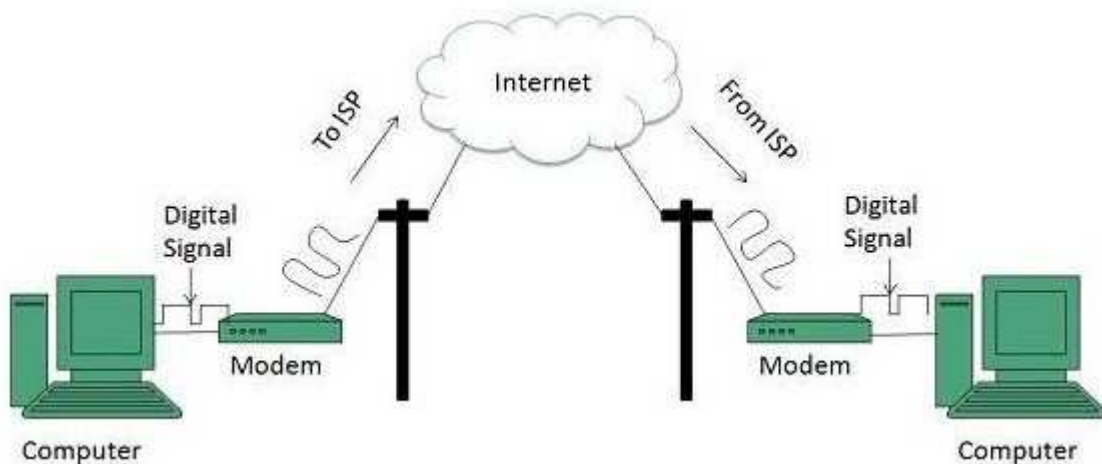
Dial-up access is cheap but slow. A modem (internal or external) connects to the Internet after the computer dials a phone number.

This analog signal is converted to digital via the modem and sent over a land-line serviced by a public telephone network.

Telephone lines are variable in quality and the connection can be poor at times.

The lines regularly experience interference and this affects the speed, anywhere from 28K to 56K.

Since a computer or other device shares the same line as the telephone, they can't be active at the same time.

Advantages of Dial-Up Connection:

- Low Cost

- Safety

- Availability

Disadvantages of Dial-Up Connection:

- Unstable Dial-up Connection

- Demands a Phone Line

- Phone Route is Engaged

2) Leased Connection:

A leased line is a dedicated, fixed-bandwidth data connection.

Dedicated means your line will have its full bandwidth reserved for your use at all times, all the way from your site to your internet service provider's core network. You won't need to share any of the available bandwidth with your internet leased line provider's other customers. This means that your connection won't slow down at peak times, like broadband does.

It allows data businesses to have a reliable, high-quality internet connection with guarantees of upload and download speed and uptime.

"Leased" refers to the connection which is rented by the Internet Service Provider (ISP) directly to a business, resulting in a service above and beyond what standard broadband provides.

Leased lines usually have these distinctive characteristics:

- Symmetrical

- Uncontended

- Point-to-point

   1. Symmetrical:

      Leased lines must be symmetrical. This means they have the same upload and download speed.

   2. Uncontended:

      Leased lines are – by definition – uncontended connections, not shared with other users.

   3. Point-to-point:

      They connect two points together, eg the ISP with a business location.

We get home, connect our phone, tablet or TV and start to stream, browse or download content. But when everyone in your area is doing the same thing, this can slow down the connection. This is because these connections are "contended" – bandwidth is shared amongst the users of a local area.

With a dedicated leased line, the bandwidth you require has been given to you and only you have access to it. This means that your connection won't be hampered by peak times throughout the day.

Internet Leased Line Used For-

- Standard web surfing - e.g. for accessing suppliers web sites, search engines, watching online videos

- Sending and receiving emails

- Downloading software updates - including operating system updates, virus definition updates, application updates (e.g. for Microsoft Office)

Advantages and Disadvantages:

Advantages:

- o Unconnected Bandwidth
- o Symmetrical Bandwidth
- o Lower Latency
- o No data transfer Restriction
- o Faster upload and download Speed

Disadvantages:

- High Installation Cost
- Lower Waiting Time

3) Broadband Connection:

The term broadband commonly refers to high-speed Internet access that is always on and faster than the traditional dial-up access and an internet connection with a high data transfer rate.

A broadband internet connection should typically have download speeds of several megabits per second. The upload bandwidth is usually significantly slower.

Some professional and more and more private internet applications can only be used with a broadband internet connection with a high bandwidth. These include applications such as teleworking, video conferences, transferring large files, streaming videos, online TV, managing pictures on cloud storage and some online games.

Broadband connection, unlike the old dial-up internet connection, will not engage your phone line when in use. In fact, having a broadband connection makes it possible for you to obtain an Internet phone service so you will no longer need the traditional phone line at all.

A broadband connection is that you are constantly connected to the Internet. You are quickly able to connect with your work's intranet and email in a matter of seconds.

Broadband includes several high-speed transmission technologies such as:

- Digital Subscriber Line (DSL)

- Cable Modem

- Fiber

- Satellite

1) **Digital Subscriber Line (DSL) :**

- DSL is a wire line transmission technology that transmits data faster over traditional copper telephone lines already installed to homes and businesses.

- The DSL (or Digital Subscriber Line) internet service makes its connection by utilizing unused telephone wires that cause no interruption to your telephone service. The speed you experience with a DSL connection varies with your distance from the switching station.

- Your speed will be slower the further away you are and faster the closer you are to the switching station and this may be a deciding factor when you attempt to select between a DSL line and a cable connection.

2) **Cable Modem:**

- The broadband cable connection is provided by the local cable TV provider. Here the cable Internet connection speed varies with the number of users on the service at a specific point in time.

- Given a specific geographical area, users of the broadband cable service share the connection bandwidth which slows the speed the more users are on the system.

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3) Fiber:

- The newest broadband service is fiber-optic, which is the fastest Internet connection thus far.

- The actual speed you experience will vary depending on a variety of factors, such as how close to your computer the service provider brings the fiber and how the service provider configures the service, including the amount of bandwidth used.

- Telecommunications providers sometimes offer fiber broadband in limited areas and have announced plans to expand their fiber networks and offer bundled voice, Internet access, and video services.

4) Satellite:

- The last and slowest broadband service is provided by satellite.

- Although this is a good replacement for dial-up for those people living in remote rural areas, the installation costs are quite high, but the ongoing monthly charges are competitive to both cable and DSL.

- Downstream and upstream speeds for satellite broadband depend on several factors, including the provider and service package

purchased the consumer's line of sight to the orbiting satellite, and the weather.

4) Wi-Fi:

Wi-Fi stands for "wireless fidelity". Wi-Fi is a wireless networking technology that allows devices such as computers (laptops and desktops), mobile devices (smart phones and wearables), and other equipment (printers and video cameras) to interface with the Internet.

It allows these devices--and many more--to exchange information with one another, creating a network.

Internet connectivity occurs through a wireless router. When you access Wi-Fi, you are connecting to a wireless router that allows your Wi-Fi-compatible devices to interface with the Internet.

Wi-Fi has been developed for mobile computing devices, such as laptops, but it is now extensively using for mobile applications and consumer electronics like televisions, DVD players, and digital cameras.

There should be two possibilities in communicating with the Wi-Fi connection that may be through an access point to the client connection or client to client connection.

Wi-Fi is one type of wireless technology. It is commonly called a wireless LAN (local area network). WiFi technology allows local area networks to operate without cable and wiring. It is making a popular choice for home and business networks.

A computer's wireless adaptor transfers the data into a radio signal and transfers the data into an antenna for users.

Wi-Fi principle:

Wi-Fi is a high-speed internet connection and network connection without the use of any cables or wires. The wireless network is operating three essential elements that are radio signals, antenna, and router.

The radio waves are keys that make Wi-Fi networking possible. The computers and cell phones are ready with Wi-Fi cards. Wi-Fi compatibility has been using a new creation to constituent within the ground connected with community network

Advantages and Disadvantages:

Advantages:

- Convenience
- Mobility
- Expandability
- Deployment

Disadvantages:

- Range
- Speed

5) Mobile Broadband:

It is a way to deliver broadband speed internet to devices while you're away from home or even on the move.

It is typically offered through a router, a lot like the one that powers your home internet, except battery-powered and smaller. There are also no wires involved, so rather than connecting to fiber, you're connecting to a mobile network.

The router does this by having a SIM card inside it, so it can connect to the same 3G, 4G, or 5G signals as a phone, and then it broadcasts that connection as a Wi-Fi network that other devices (such as laptops and tablets) can detect and connect to.

There are also mobile broadband dongles, which are like a USB stick that you plug into a laptop or other supported device to get them online. These are

more compact but can only get one device connected at once, and aren't compatible with the same range of devices.

6) Mobile Hotspot:

In every smartphone, a mobile hotspot is a normal feature. Once the hotspot in the mobile phone is turned ON then the mobile operator can share the network connection wirelessly through other devices to allow the Internet. A handy wifi hotspot is a mobile hotspot that is attained throughout a carrier of the cell phone. It is a portable device that uses cellular towers to broadcast signals.

The different devices like laptops, iPods can be connected wirelessly toward the device which connects toward the Internet wherever you travel.

Like a smartphone, the monthly cost of the moveable hotspot depends on the usage of the data plan you choose. This kind of hotspot is more consistent to allow the Internet by searching for stationary public WiFi hotspots.

Advantages and Disadvantages

Advantages:

- Mobility

- Versatility

Disadvantages:

- Speed

- Data Caps

- Cost

7) Cable Modem Connection:

A cable modem is a peripheral device used to connect to the Internet. It operates over coax cable TV lines and provides high-speed Internet access.

Since cable modems offer an always-on connection and fast data transfer rates, they are considered broadband devices.

It converts an analog signal to a digital signal for the purpose of granting access to broadband Internet. A cable modem works by connecting a coaxial cable and then a Cat 5 (Ethernet) cord from the modem to a computer or network router.

Network routers share your Internet connection between multiple computers. More modern cable modems may have the router built-in with the ability to share the connection over Wi-Fi.

How does it work?

First, your internet service provider sends a data signal through the coaxial cable, or coax cable, into your home—specifically, to your modem.

The modem then uses an Ethernet cable to connect to your computer or router, which is what gives you access to high-speed internet. If you choose to use a router, you can then broadcast a Wi-Fi signal throughout your home.

Cable internet service providers transmit data between servers using this coaxial cable, and since TV itself takes up only a small portion of the cable's bandwidth, it leaves room for internet service to work within the same network.

These cable networks stretch all across the country, and there are even undersea cables that reach between water-separated areas. Plus, cable internet can spread speeds evenly among individual users. It also means that if you pay more, you have access to more bandwidth, which means faster speeds.

Working of Internet

Most of the terms on the Internet are prefixed with the term web. The electronic pages seen on the Internet are known as **web pages**. A web page can be defined as the document that we see on the Internet. Many web pages linked with each other combine to form a **website**. A web page can be written in the language known as **HTML (Hyper Text Markup Language)**. HTML is a very simple language having a number of options to represent text.

Many other scripting languages have now been developed which can be embedded into HTML, giving it the power to interact with the users. These dynamic web pages can take inputs from users and give information accordingly – taking in the location of the user before displaying the weather forecast. For example, a protocol called Hyper Text Transfer Protocol (HTTP) is used to transmit and receive the web pages.

- **Web Browser:**

  The web is a collection of a huge amount of information. Every single web page consists of some information and also a number of links, which connects us to other related web pages. To visit the linked web pages, just click over the linked text and the next web page opens up.

  Just like a word processing application is needed to open a word processor document, an application is needed to view an HTML document. To view a web page we need special software called web browser.

- **www (World Wide Web):**

  WWW is a hypermedia based software technology allowing consolidation of hypertext, graphics, audio, video and multimedia to provide information on almost each and every topic/subject/area.

  Any website located on the Internet has an address associated with it indicating the location of the website. Every page has an address associated with it. This address is known as the URL.

- **URL (Uniform Resource Locator):**

  URL stands for Uniform Resource Locator. Every web page that is displayed on the Internet has a specific address associated with it. This address is known as the URL. It tells us the location of the web page being displayed and other related information.
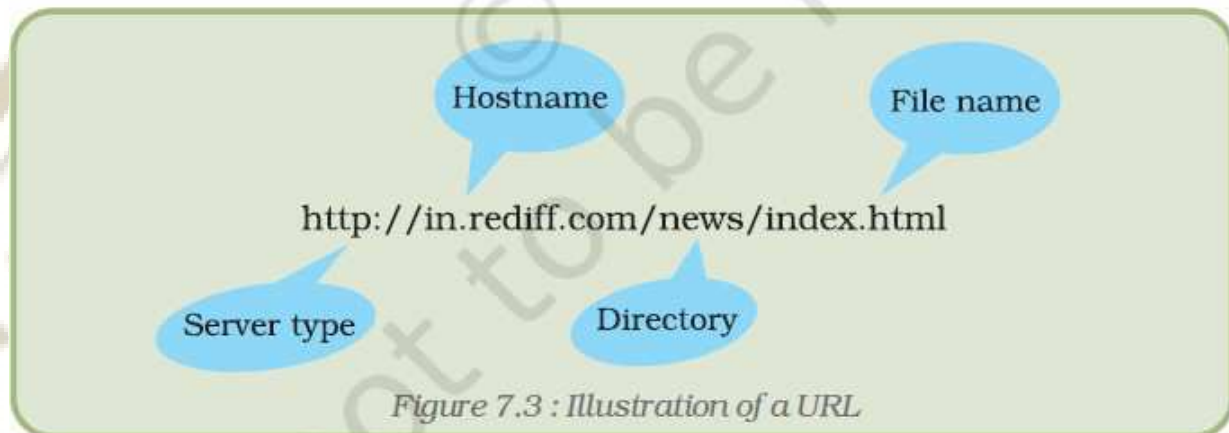
The URL consists of four basic parts, namely, server type, hostname, folder name and the filename. Each one of these has a specific function.

The structure of a URL can be represented as follows:

Server type://Hostname/directory/sub-directory/.../filename

Example:

http://in.rediff.com/news/index.html

Figure 7.3 : Illustration of a URL

Some protocols and its usage:

Protocols	Description
http	Hyper Text Transfer Protocol is used to transfer the hypertext
ftp	File Transfer Protocol is used to transfer binary and text files over the internet.
telnet	For remote login over a TCP/IP connection
TCP/IP	Transmission Control Protocol Internet Protocol. TCP/IP consists of a set of two protocols i.e. Transfer Control Protocol and Internet Protocol. Transfer Control Protocol controls the flow of data and is a reliable service protocol. Every computer in a network has a unique IP address associated with it. IP identifies and reach the target computer on the network.
UDP	User Datagram Packet is used to transfer data between two computers. It is an unreliable protocol, offering no

guarantee for data delivery.

There are other protocols also like SLIP (Serial Line Internet Protocol), SMTP (Simple Mail Transfer Protocol) ARP (Address Resolution Protocol) PPP (Point to Point Protocol), etc.

- ***Connecting to Internet:***

  There are several Internet Service Providers (ISPs) in India like VSNL, BSNL, Airtel, Reliance, etc. They charge some nominal fee for installation and connection. Depending on the requirement we can get an Internet connection in any of the following ways:

  - Dial-Up connection

  - Broadband

  - Wifi

  - Leased Lines

    In order to have a connection we need a device called the **modem**. This device converts the digital signal from the computer into an analogue signal that can travel through the telephone line. On the other end, this analogue signal is again converted back to digital form by the modem at the destination end. Some computer systems have internal modems (built-in within the motherboard) while in some systems there might be a need to have an external modem to have an Internet connection.

    Another device called a **router** can be attached to the computer to access the Internet. The router is a device used for connecting two different networks.

- ***Domain Names:***

All the websites on the Internet have unique names associated with them. To launch a website, we must have a unique domain name. In order to avoid any conflict within the names of the websites the concept of domain names was developed.

There are certain websites which have .ac which indicates academic organizations, .in suffixed to their name indicating that they belong to India.

A domain can be generic or according to the names of the country. Some common domain names are:

1. in   stands for India (country name)
2. gov   indicates government agencies
3. net   network organizations
4. org   non-profit organizations
5. edu   educational organizations
6. com   commercial organizations
7. mil   military or defense

Difference between Internet, Intranet and Extranet

Internet:

The **Internet** is a globally-connected network of computers that enables people to share information and communicate with each other. It is an international network of networks, linked by optical, wireless and electronic networking technologies which consist of business, public, educational and government networks.

Internet comprises of:

- **People:** People use and develop the network.

- **Resources:** A collection of resources that can be reached from those networks.

- **A setup for collaboration:** It includes the member of the research and educational committees worldwide.
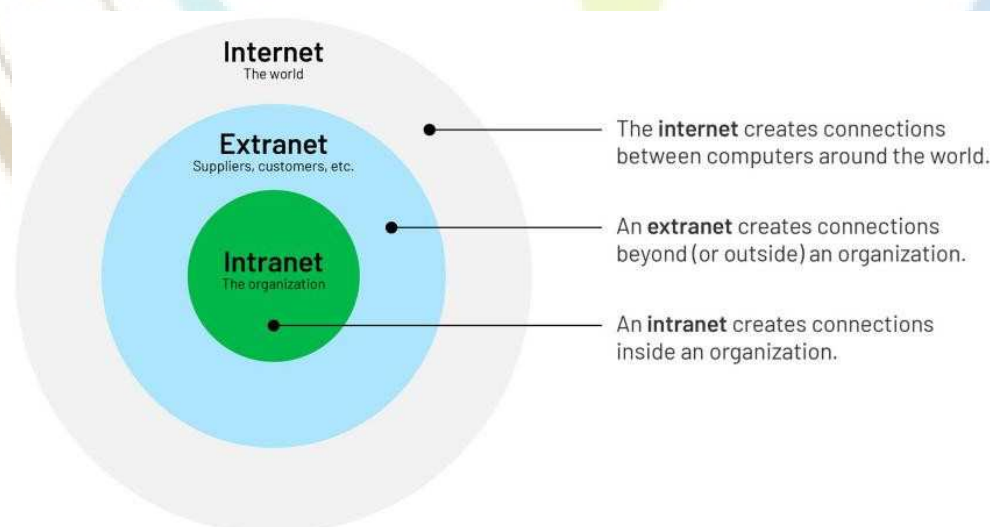
Intranet:

An intranet is a private network that is contained within an organization. It may consist of many interlinked local area networks and also used leased line in the wise area network. The main purpose of the intranet is to share company information and computing resources among employee.

It is a local or restricted network that enables people to store, organize, and share information within an organization. We can say that Intranet is an internal private network built within an organization using Internet and World Wide Web standards and products that allows employees of an organization to gain access to corporate information.

Extranet:

An extranet is a web portal that is accessible by an organization and its external vendors, partners, customers, or any other users that require access to restricted information.

An extranet can be viewed as part of a company's intranet that is extended to users outside the company. With an extranet, the host organization manages the site administration and content, and provides controlled access to internal and external members. Some example use cases for an extranet include a partner or vendor portal, a customer community, or a franchise network.

Difference between Internet, Intranet and Extranet

Basis of Comparison	Internet	Intranet	Extranet
Description	Internet can be described as a global system of interconnected computer network.	Intranet can be described as a network of computers or a private network designed for a specific group of users (organization).	Extranet can be described as a private network that uses public network to share information with clients (suppliers and vendors).
Purpose	Internet is a means of sharing information throughout the world.	Intranet is a means of sharing sensitive or confidential information throughout the organization.	Extranet is a means of conveying information between members of the organization and external members.
Size Of The Network	Internet is the largest network in as far as the number of connected devices is concerned.	It is a small network with a few numbers of connected devices.	It is a small network with a few numbers of connected devices.
Ownership	Internet has no known ownership.	Ownership of intranet is by a single organization.	Ownership of extranet is by a single or multiple organizations.
Access	Users have unrestricted access and can access internet	An intranet may be accessible from the internet, but it is protected by a	An intranet may be accessible from the internet, but it is protected by a

	anonymously.	password and accessible only to authorized users.	password and accessible only to authorized users.
coverage	All over the world.	Restricted area up to an organization.	Restricted area up to an organization and some of its stakeholders or so.
Information	Internet contains different source of information and is available for all.	Intranet contains only specific group information.	Extranet contains only specific group information.
No. of computer connected	It is largest in number of computer connected.	The minimal number of devices connected.	The connected devices are comparable with intranet.
Security	Security is dependent of the user of the device connected to network.	Security of the network is enforced through a firewall.	Security of the network is enforced through a firewall that separates internet and extranet.
User Training	Users need no training on how to work with the network.	Time is required to train users on how to work with the network.	Time is required to train users on how to work with the network.
Users	General public.	Employees of the organization.	Employees of the organization which are connected.
Content On The Network	Content in the network is readily accessible by everyone who is connected.	The content in the network is accessible only to members of the organization.	The content on the network is accessible to members of the organization and external members

			with access to the network.
Example	An example of internet is the network you use to Google words with.	An example intranet is a company like ExxonMobil using internal network for its business operations.	Example of extranet is when companies like HP, Intel and Lenovo decide to use the same network for related business operations.